



ZXM61N03F

30V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}=30V$; $R_{DS(ON)}=0.22\Omega$; $I_D=1.4A$

DESCRIPTION

This new generation of high density MOSFETs from Zetex utilises a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.

FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- SOT23 package

APPLICATIONS

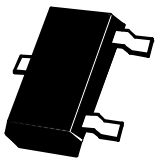
- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control

ORDERING INFORMATION

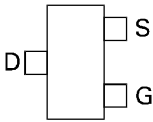
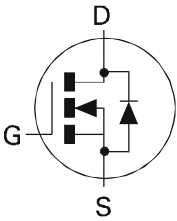
| DEVICE | REEL SIZE (inches) | TAPE WIDTH (mm) | QUANTITY PER REEL |
|-------------|--------------------|-----------------|-------------------|
| ZXM61N03FTA | 7 | 8mm embossed | 3000 units |
| ZXM61N03FTC | 13 | 8mm embossed | 10000 units |

DEVICE MARKING

- N03



SOT23



Top View



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ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | LIMIT | UNIT |
|---|----------------|-------------|----------------------|
| Drain-Source Voltage | V_{DSS} | 30 | V |
| Gate Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current ($V_{GS}=10V$; $T_A=25^\circ C$)(b) ($V_{GS}=10V$; $T_A=70^\circ C$)(b) | I_D | 1.4 1.1 | A |
| Pulsed Drain Current (c) | I_{DM} | 7.3 | A |
| Continuous Source Current (Body Diode) (b) | I_S | 0.8 | A |
| Pulsed Source Current (Body Diode) | I_{SM} | 7.3 | A |
| Power Dissipation at $T_A=25^\circ C$ (a) Linear Derating Factor | P_D | 625 5 | mW mW/ $^\circ C$ |
| Power Dissipation at $T_A=25^\circ C$ (b) Linear Derating Factor | P_D | 806 6.4 | mW mW/ $^\circ C$ |
| Operating and Storage Temperature Range | T_j, T_{stg} | -55 to +150 | $^\circ C$ |

THERMAL RESISTANCE

| PARAMETER | SYMBOL | VALUE | UNIT |
|-------------------------|-----------------|-------|--------------|
| Junction to Ambient (a) | $R_{\theta JA}$ | 200 | $^\circ C/W$ |
| Junction to Ambient (b) | $R_{\theta JA}$ | 155 | $^\circ C/W$ |

NOTES

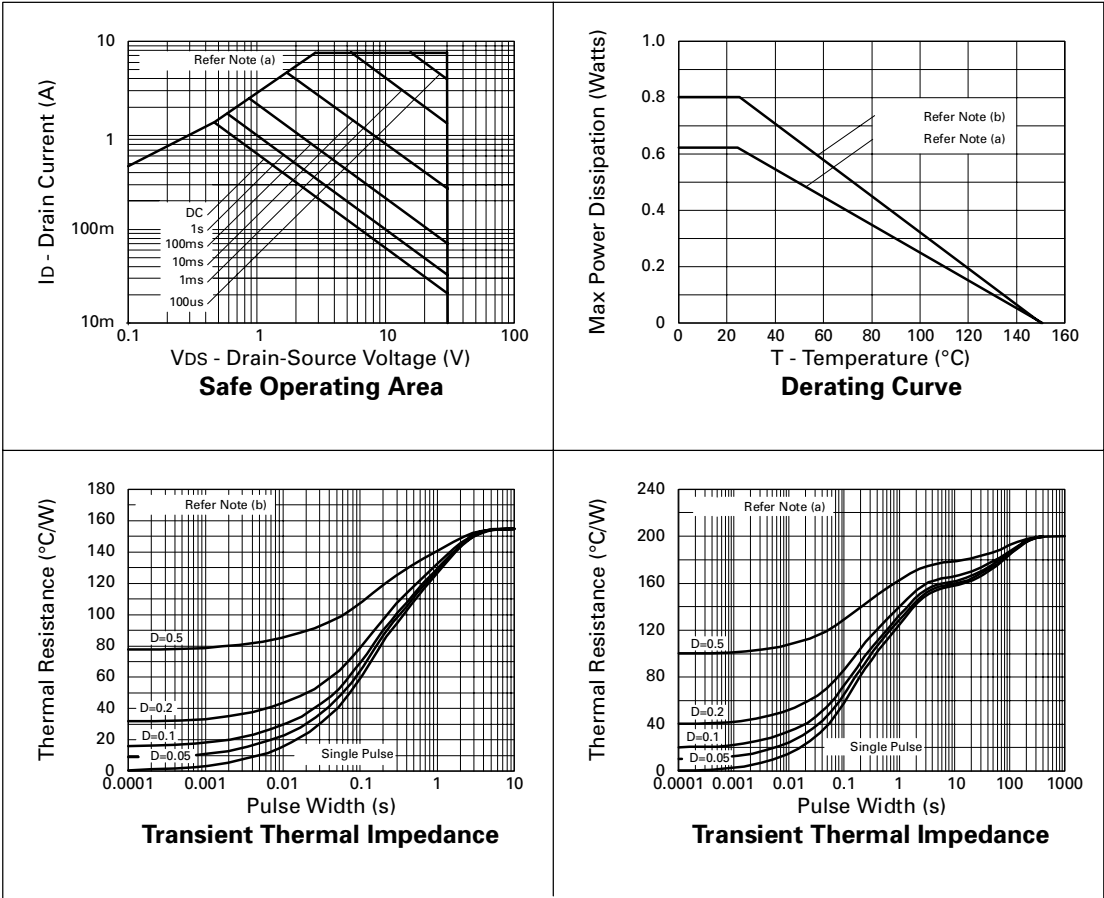
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at $t \leq 5$ secs.

(c) Repetitive rating - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

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CHARACTERISTICS



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ELECTRICAL CHARACTERISTICS (at T_A = 25°C unless otherwise stated).

| PARAMETER | SYMBOL | MIN. | TYP.(3) | MAX. | UNIT | CONDITIONS. |
|---|----------------------|------|---------|--------------|--------|---|
| STATIC | | | | | | |
| Drain-Source Breakdown Voltage | V _{(BR)DSS} | 30 | | | V | I _D =250μA, V _{GS} =0V |
| Zero Gate Voltage Drain Current | I _{DSS} | | | 1 | μA | V _{DS} =30V, V _{GS} =0V |
| Gate-Body Leakage | I _{GSS} | | | 100 | nA | V _{GS} =± 20V, V _{DS} =0V |
| Gate-Source Threshold Voltage | V _{GS(th)} | 1.0 | | | V | I _D =250μA, V _{DS} = V _{GS} |
| Static Drain-Source On-State Resistance (1) | R _{DS(on)} | | | 0.22 0.30 | Ω Ω | V _{GS} =10V, I _D =0.91A V _{GS} =4.5V, I _D =0.46A |
| Forward Transconductance (3) | g _{fs} | 0.87 | | | S | V _{DS} =10V, I _D =0.46A |
| DYNAMIC (3) | | | | | | |
| Input Capacitance | C _{iss} | | 150 | | pF | V _{DS} =25 V, V _{GS} =0V, f=1MHz |
| Output Capacitance | C _{oss} | | 35 | | pF | |
| Reverse Transfer Capacitance | C _{rss} | | 15 | | pF | |
| SWITCHING(2) (3) | | | | | | |
| Turn-On Delay Time | t _{d(on)} | | 1.9 | | ns | V _{DD} =15V, I _D =0.91A R _G =6.2Ω, R _D =16Ω (refer to test circuit) |
| Rise Time | t _r | | 2.5 | | ns | |
| Turn-Off Delay Time | t _{d(off)} | | 5.8 | | ns | |
| Fall Time | t _f | | 3.0 | | ns | |
| Total Gate Charge | Q _g | | | 4.1 | nC | V _{DS} =24V, V _{GS} =10V, I _D =0.91A (refer to test circuit) |
| Gate-Source Charge | Q _{gs} | | | 0.4 | nC | |
| Gate-Drain Charge | Q _{gd} | | | 0.63 | nC | |
| SOURCE-DRAIN DIODE | | | | | | |
| Diode Forward Voltage (1) | V _{SD} | | | 0.95 | V | T _J =25°C, I _S =0.91A, V _{GS} =0V |
| Reverse Recovery Time (3) | t _{rr} | | 11.0 | | ns | T _J =25°C, I _F =0.91A, di/dt= 100A/μs |
| Reverse Recovery Charge (3) | Q _{rr} | | 3.5 | | nC | |

NOTES

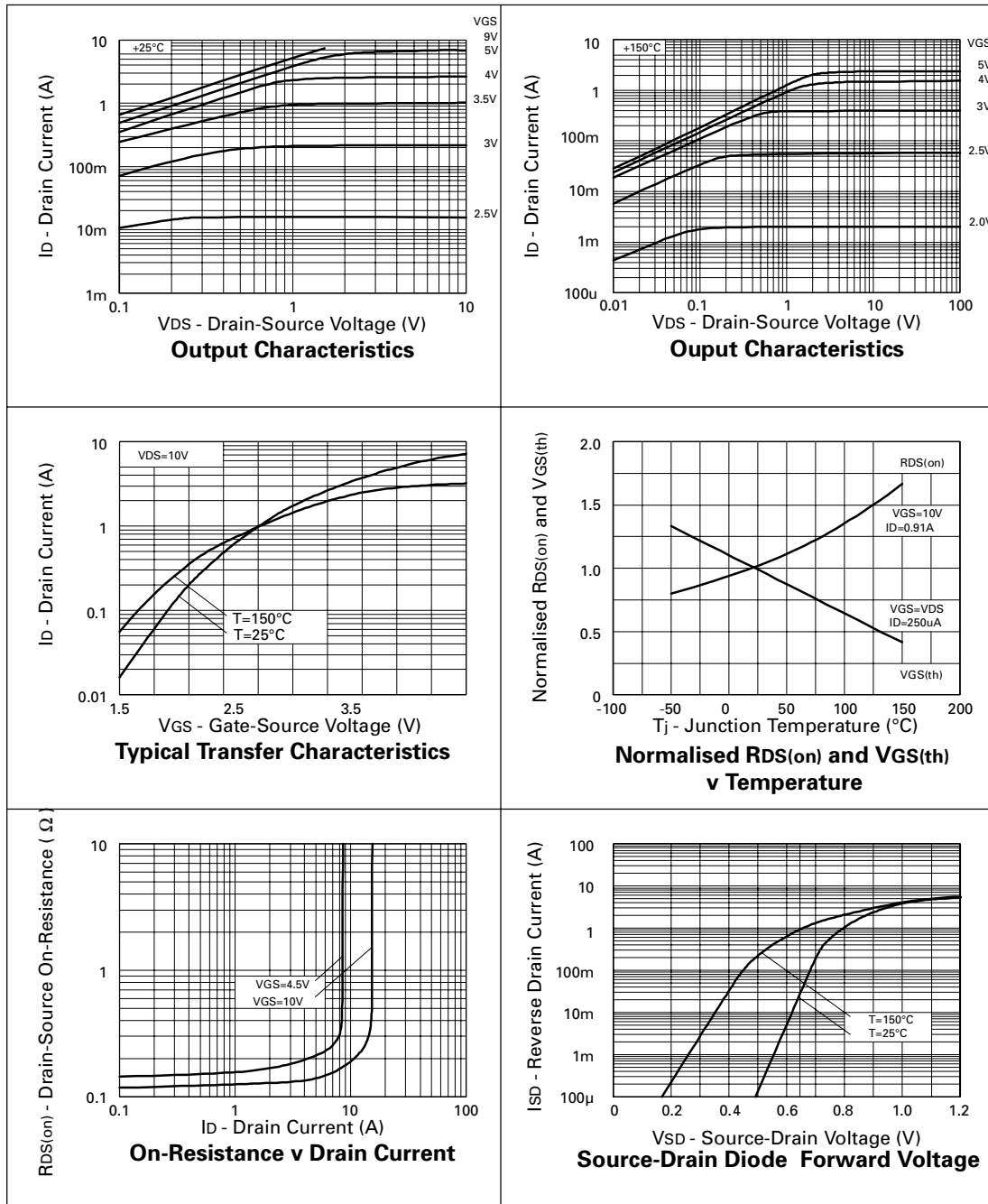
(1) Measured under pulsed conditions. Width≤300μs. Duty cycle ≤2% .

(2) Switching characteristics are independent of operating junction temperature.

(3) For design aid only, not subject to production testing.

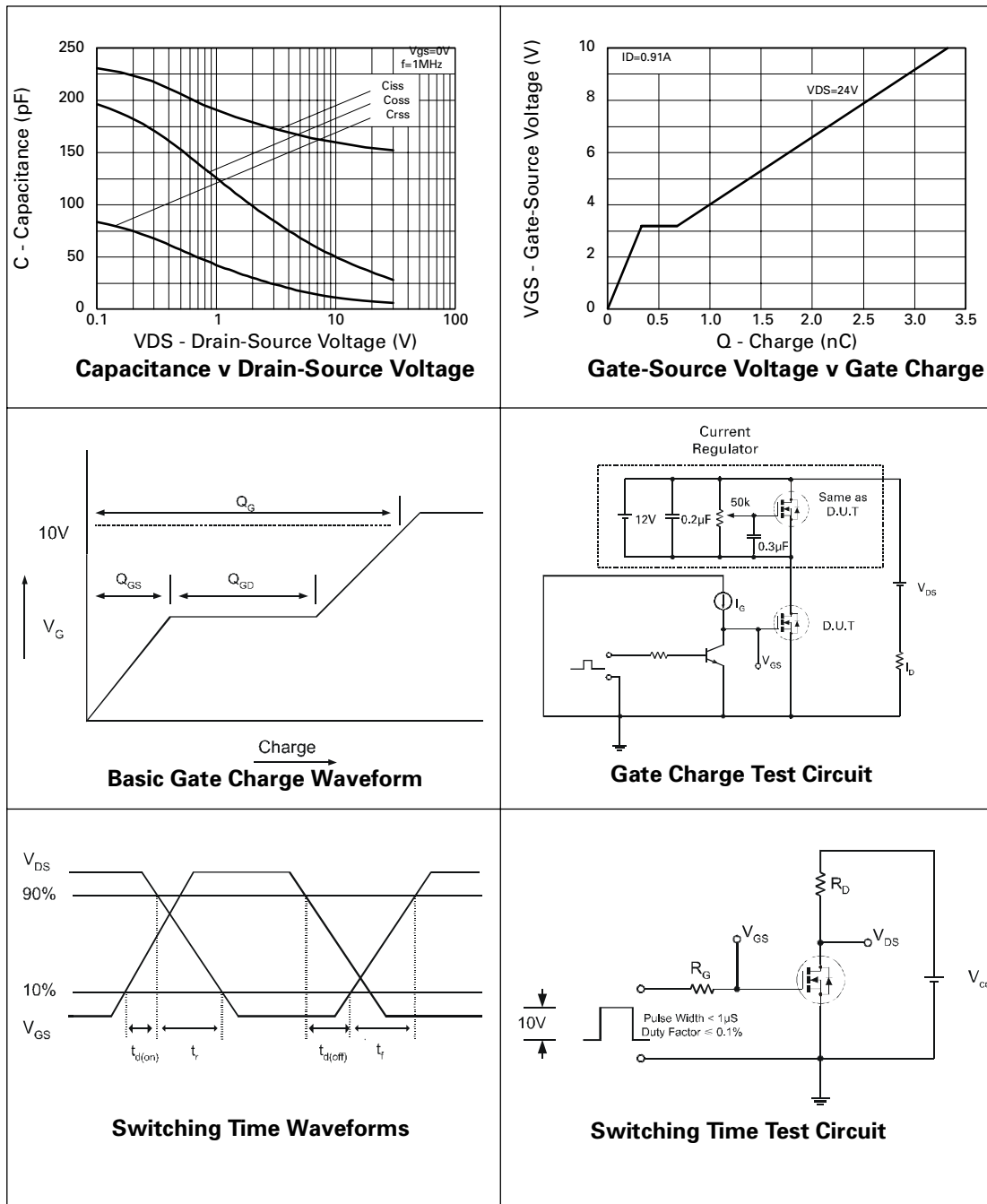
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TYPICAL CHARACTERISTICS



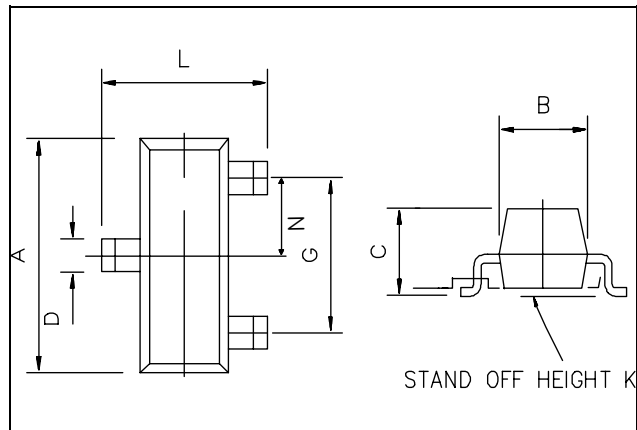
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TYPICAL CHARACTERISTICS



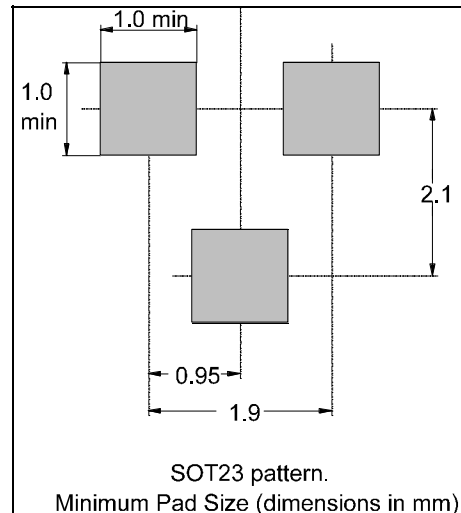
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PACKAGE DIMENSIONS



| DIM | Millimetres | | Inches | |
|-----|-------------|------|-----------|--------|
| | Min | Max | Min | Max |
| A | 2.67 | 3.05 | 0.105 | 0.120 |
| B | 1.20 | 1.40 | 0.047 | 0.055 |
| C | — | 1.10 | — | 0.043 |
| D | 0.37 | 0.53 | 0.0145 | 0.021 |
| F | 0.085 | 0.15 | 0.0033 | 0.0059 |
| G | NOM 1.9 | | NOM 0.075 | |
| K | 0.01 | 0.10 | 0.0004 | 0.004 |
| L | 2.10 | 2.50 | 0.0825 | 0.0985 |
| N | NOM 0.95 | | NOM 0.037 | |

PAD LAYOUT DETAILS



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